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EXAMINER

SANTIAGO, MARICELI

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte LEWIS COLEMAN

Appeal 2007-3866
Application 10/009,845
Technology Center 2600

Decided: April 22, 2008

Before KENNETH W. HAIRSTON, ROBERT E. NAPPI and JOHN A.
JEFFERY, *Administrative Patent Judges*.

HAIRSTON, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Appellant seeks our review under 35 U.S.C. § 134 of the Examiner's final rejection of claims 1-17. We have jurisdiction under 35 U.S.C. § 6(b).

We affirm.

INVENTION

Appellant's claimed invention comprises an improved electrically excited gas discharge lamp containing a gas mixture having at least one IR-active gas species (i.e., CO₂), which, when excited, provides an output characteristic of spontaneous emission to a ground state wherein the improvement comprises the inclusion within the lamp envelope of a catalytic material deposited in a finely divided form (Spec. 7:7-14 and Figure 1, layer of catalyst 26). The method of providing the catalytic coating on the interior of the discharge lamp varies depending on the material used for the catalyst (Spec. 9).

Claims 1 and 10 reproduced below are representative of the subject matter on appeal:

1. A method of constructing an improved, electrically excited, gas discharge lamp, comprising the steps of:

constructing a lamp envelope;

cleaning said lamp envelope and

filling said envelope with a gas mixture comprising at least one IR-active gas species, said gas species being such that said lamp provides an output characteristic of spontaneous emission to a ground state when electrically excited;

the improvement being the additional step of including a catalytic material deposited in finely divided form within said lamp envelope.

10. An electrically excited gas discharge lamp, comprising:
- a lamp envelope containing a gas mixture comprising at least one IR-active gas species;
 - electrodes external to said envelope for exciting said at least one IR-active gas species, said gas species being such that said lamp provides an output characteristic of spontaneous emission to a ground state; and
 - a catalytic material deposited in finely divided form located within said lamp envelope.

THE REJECTION

The Examiner relies upon the following as evidence of unpatentability:

Kaminski	US 4,547,886	Oct. 15, 1985
Yatsiv	US 5,300,859	Apr. 05, 1994
Webley	GB 1,591,709	Jun. 24, 1981

The following rejection is before us for review:

Claims 1-17 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Yatsiv in view of Kaminski.

OBVIOUSNESS

Claims 1-17 stand or fall together (Br. 8) with claims 1 and 10 as representative (Br. 9-16).¹ There are four obviousness issues before us. The issues

¹ Only arguments made by Appellant have been considered in this decision. Arguments, which Appellant could have made but did not make in the Brief, have

will guide us in determining whether Appellant has shown that the Examiner erred in rejecting claims 1-17 under 35 U.S.C. § 103(a).

We address the issues in the order they were presented. The first issue turns on whether Kaminski teaches a catalytic material deposited in a finely divided form. The second issue turns on whether the prior art needs to solve the same problem set forth by Appellant. The third issue turns on whether the Kaminski reference constitutes analogous prior art. The fourth issue turns on whether the mere age of the references is persuasive of the unobviousness of the combination of their teachings.

FINDINGS OF FACT

The relevant facts include the following:

1. Kaminski teaches that instead of a catalyst being in the form of solid pellets, a catalyst may be coated on a substrate if that is convenient (col. 2, ll. 22-26).
2. Appellant's specification describes the finely divided form of the catalyst as "catalytic coating on the interior of the discharge lamp envelope" (Spec. 9).
3. Yatsiv teaches an IR-radiation source having a cleaned lamp envelope filled with gas mixture with at least one IR-active gas species (e.g., CO₂) wherein the lamp provides an output characteristic of spontaneous emission to a ground state when electrically excited (col. 2, ll. 3-18).
4. Kaminski teaches a discharge CO₂ laser having a catalyst in the form of

not been considered and are deemed waived. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2004).

pellets or as a coating over a substrate in order to promote recombination of CO and O into CO₂ and thus, improve loss in optical power caused by the dissociation of the electrically excited CO₂ (i.e., CO and O) (col. 1, ll. 14-20 and col. 1, l. 65-col. 2, l. 37).

5. Webley teaches that dissociation of the contained gases such as CO₂ into its constituents limits the useful lifetime of the device (col. 1, ll. 8-15).
6. Webley teaches that the desired solution to the limited lifetime of discharge devices would be the regeneration of the carbon oxides (col. 2, ll. 59-64).

PRINCIPLES OF LAW

“Section 103 forbids issuance of a patent when ‘the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.’” *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1734 (2007). The question of obviousness is resolved on the basis of underlying factual determinations including (1) the scope and content of the prior art, (2) any differences between the claimed subject matter and the prior art, (3) the level of skill in the art, and (4) where in evidence, so-called secondary considerations. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). *See also KSR*, 127 S. Ct. at 1734 (“While the sequence of these questions might be reordered in any particular case, the [*Graham*] factors continue to define the inquiry that controls.”)

Where the claimed subject matter is a combination that only unites old elements with no change in their respective established functions, and the

combination yields predictable results, the claim is unpatentable as obvious under 35 U.S.C. § 103(a). *KSR v. Teleflex*, 127 S. Ct. at 1740.

During ex parte prosecution, claims must be interpreted as broadly as their terms reasonably allow since Applicants have the power during the administrative process to amend the claims to avoid the prior art. *In re Zletz*, 893 F.2d 319, 322 (Fed. Cir. 1989).

We determine the scope of the claims in patent applications not solely on the basis of the claim language, but upon giving claims their broadest reasonable construction in light of the specification as it would be interpreted by one of ordinary skill in the art. *In re Am. Acad. of Sci. Tech. Ctr.*, 367 F.3d 1359, 1364 (Fed. Cir. 2004).

The claims, of course, do not stand alone. Rather, they are part of ‘a fully integrated written instrument,’ . . . consisting principally of a specification that concludes with the claims. For that reason, claims ‘must be read in view of the specification, of which they are a part.’ . . . [T]he specification ‘is always highly relevant to the claim construction analysis. Usually, it is dispositive; it is the single best guide to the meaning of a disputed term.’

Phillips v. AWH Corp., 415 F.3d 1303, 1315 (Fed. Cir. 2005).

The prior art need not suggest solving the same problem set forth by Appellant. *In re Dillon*, 919 F.2d 688, 692-93 (Fed. Cir. 1990).

According to the Court of Appeals for the Federal Circuit, “[t]wo separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor’s endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is

involved.” *In re Bigio*, 381 F.3d 1320, 1325 (Fed. Cir. 2004)(internal citations omitted).

“The mere age of the references is not persuasive of the unobviousness of the combination of their teachings, absent evidence that, notwithstanding knowledge of the references, the art tried and failed to solve the problem.” *In re Wright*, 569 F.2d 1124, 1127 (CCPA 1977).

ANALYSIS

We address Appellant’s arguments in the order they were presented.

A. Does Kaminski teach a catalytic material deposited in a finely divided form?

Appellant argues that Kaminski contains no teaching or suggestion as to a catalytic material deposited in finely divided form (Br. 10).² Appellant argues that the Kaminski invention is directed at the use of solid particles of a catalyst (Br. 10). Appellant further argues that even with the suggestion in Kaminski that the catalyst may also be “coated on a substrate,” there is still no mention or suggestion of a catalytic material deposited in a finely divided form (Br. 10).

The Examiner responds that a pellet by definition is a small piece of material and thus constitutes a finely divided form (Ans. 7). The Examiner further notes that neither the claims nor the specification provides a standard for ascertaining the requisite degree for how fine is the finely divided form (Ans. 7). The Examiner concludes that because no limiting dimensions to the size of the catalytic material

² We refer to the most recent Appeal Brief filed June 21, 2005 throughout this opinion.

have been disclosed, the catalytic material in the form of pellets is necessarily in a finely divided form (Ans. 7).

As stated *supra*, during ex parte prosecution, claims must be interpreted as broadly as their terms reasonably allow since Applicant has the power during the administrative process to amend the claims to avoid the prior art. *In re Zletz*, 893 F.2d at 322.

Thus, based on the broadest reasonable interpretation of the disputed claimed limitation: “a catalytic material deposited in finely divided form,” can be reasonably construed as a catalyst in the form of solid pellets.

Furthermore, Kaminski teaches that instead of a catalyst being in the form of solid pellets, a catalyst may be coated on a substrate if that is convenient (Finding of Fact 1). Appellant’s specification describes the finely divided form of the catalyst as “catalytic coating on the interior of the discharge lamp envelope” (Finding of Fact 2), or, otherwise stated, a catalyst coated on a substrate.

Thus, as stated *supra*, Kaminski’s teaching of coating the catalyst on a substrate is consistent with the definition provided by Appellant’s specification defining “finely divided form” of a catalyst as a catalytic coating and hence dispositive of the meaning of the disputed claimed limitation. *Phillips*, 415 F.3d at 1315.

B. Does Kaminski need to solve the same problem as set forth by Appellant?

Appellant argues that Kaminski's objective is the use of a catalyst to avoid loss of power, whereas the objective of Appellant's invention is the use of a catalyst to ensure spectral stability (Br. 11). Appellant further argues that the Examiner's rationale for combining Yatsiv with Kaminski is "nowhere, stated, suggested or claimed in the present application" (Br. 11).

The Examiner in response cited the following MPEP § 2144 (emphasis in original):

RATIONALE DIFFERENT FROM APPLICANT'S IS PERMISSIBLE
The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972) (discussed below); *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990), cert. denied, 500 U.S. 904 (1991) (discussed below). Although *Ex parte Levengood*, 28 USPQ2d 1300, 1302 (Bd. Pat. App. & Inter. 1993) states that obviousness cannot be established by combining references "without also providing evidence of the motivating force which would impel one skilled in the art to do what the patent applicant has done" (emphasis added), reading the quotation in context it is clear that while there must be motivation to make the claimed invention, there is no requirement that the prior art provide the same reason as the applicant to make the claimed invention.

MPEP § 2144

We agree with the Examiner's findings of facts and conclusions as set out in the Answer and adopt them as our own. We add the following primarily for emphasis.

Appellant's argument that Kaminski does not mention the problem addressed by Appellant is without merit since the prior art need not suggest solving the same problem addressed by Appellant. *In re Dillon*, 919 F.2d at 692-93. Thus, we are not persuaded by Appellant's argument that Kaminski's use of a catalyst is to solve a different problem, namely loss of power, as opposed to Appellant's use of the catalyst, which is to solve the problem of spectral instability.

C. Does the Kaminski reference constitute analogous prior art?

The Appellant argues that the discharge mechanism in lasers and discharge lamps involve a different emission process and consequently the current disclosure deals with the self-absorption process whereas in Kaminski such self-absorption is effectively non-existent (Br. 12-13). Appellant believes that there would not be a motivation for one of ordinary skill in the art to take the solution used to combat dissociation in an IR laser and apply it in discharge lamps (Br. 13). Thus, the Appellant questions the assertion of the Examiner that gas discharge lasers and gas discharge lamps are "in the same field of endeavor," despite the similarities of the dissociation phenomenon of their gases (Br. 13). Furthermore, Appellant disagrees with the Examiner's citation of the Webley discharge lamp reference as evidence of the similarity of the dissociation phenomenon of the carbon dioxide (CO₂) to carbon monoxide (CO) and oxygen (O₂) found in both IR lasers and discharge lamps. Appellant explains that Webley describes his method as combating the dissociation of the contained gases into their constituent elements which Appellant understands to mean carbon and oxygen (Br. 14).

While the Examiner concedes that the emission mechanisms of the laser and the lamp are different, the question at hand is not related to the emission but rather to the agent(s) responsible for that emission (Ans. 9), (i.e., CO₂). The Examiner finds that Yatsiv teaches an IR-discharge lamp, wherein the IR-active gas species is CO₂, and, as evidenced by Webley, IR-CO₂ lamps suffer from decomposition or dissociation of CO₂ into CO and O₂ (Ans. 9). The Examiner further finds that Kaminski teaches an IR-laser, wherein the IR-active gas species is CO₂, and teaches the dissociation of CO₂ into CO and O₂ (Ans. 10). The Examiner states that in order to overcome this problem, Kaminski teaches using a catalytic material to recombine CO and O₂ back into CO₂ (Ans. 10). The Examiner finds that while Yatsiv teaches a lamp and Kaminski a laser, both systems are discharge devices which require CO₂, and both suffer from the same problem: dissociation of CO₂ (Ans. 10). Thus, the Examiner concludes that it would have been obvious to one of ordinary skill in the art at the time the invention was made to apply the teachings of Kaminski to the discharge lamp of Yatsiv, in order to reduce or eliminate the problems caused by the decomposition of CO₂ (Ans. 10).

Thus, the Examiner's position is that both discharge devices are within the same field of endeavor. However, even if we assume, without deciding, that they are not in the same field of endeavor, Kaminski is nonetheless reasonably pertinent to the particular problem encountered by Appellant in IR-lamps, and thus properly relied upon as a basis for the rejection of the claimed invention (Ans. 10).

We agree with the Examiner's findings of facts and conclusions as set out in the Answer and adopt them as our own. We add the following primarily for emphasis.

As stated *supra*, two separate tests define the scope of analogous prior art: (1) whether the art is from the same field of endeavor, regardless of the problem addressed and, (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved. *In re Bigio*, 381 F.3d at 1325.

Yatsiv teaches an IR-radiation source having a cleaned lamp envelope filled with gas mixture with at least one IR-active gas species (e.g., CO₂) wherein the lamp provides an output characteristic of spontaneous emission to a ground state when electrically excited (Finding of Fact 3). Yatsiv does not teach a catalytic material deposited in finely divided form within the lamp envelope. Kaminski teaches a discharge CO₂ laser having a catalyst in the form of pellets or as a coating over a substrate in order to promote recombination of CO and O into CO₂ and, thus, improve loss in optical power caused by the dissociation of the electrically excited CO₂ (i.e., CO and O) (Finding of Fact 4). Webley serves as evidence that dissociation of the contained gases such as CO₂ into its constituents limits the useful lifetime of the device, thereby constituting a recognized problem in discharge tubes (i.e., such as the discharge IR-radiation source disclosed by Yatsiv containing CO₂) (Finding of Fact 5). Webley further serves as evidence that the desired solution to the limited lifetime of discharge devices would be the regeneration of the carbon oxides (Finding of Fact 6).

Thus, Kaminski is analogous prior art because IR-radiation sources and discharge CO₂ lasers as disclosed by Yatsiv and Kaminski, respectively, constitute discharge devices requiring CO₂, and both types of systems suffer from the same problem, which is the dissociation of CO₂ (Findings of Fact 3-6).

For the foregoing reasons, we are not persuaded by Appellant's argument that Kaminski does not constitute analogous prior art or is at least pertinent to the particular problem with which the inventor is involved (i.e., dissociation of CO₂).

D. Is the mere age of the references persuasive of the unobviousness of the combination of their teachings?

Appellant argues that if the extension of the use of catalysts in lasers to their use in discharge lamps, for any function whatsoever, were indeed obvious, it is not clear why catalysts were not used in the construction of the discharge lamps described over 20 years later in the Yatsiv patent (Br. 15).

The Examiner responds that the Basic Requirements of a Prima Facie Case of Obviousness as set out in MPEP § 2143 consist of:

- i. A suggestion or motivation to modify the references;
- ii. A reasonable expectation of success is required; and
- iii. All claim limitations must be taught or suggested (Ans. 10-11).

The Examiner states that the motivation for combining the references is the reduction or elimination of the problems caused by the dissociation of CO₂ (Ans. 11). The Examiner further states that the advantages of using a catalytic material have been documented, hence supporting an expectation of success (i.e., the catalytic material reduces arcing between electrodes and loss in optical power of the lamp) (Ans. 11). The Examiner states that the Yatsiv-Kaminski combination teaches all the claimed limitations as indicated in the rejection (Ans. 11). The Examiner notes that to establish a prima facie case of obviousness, the time difference between the references used is irrelevant. The age

of the references has no bearing in the determination of patentability or lack of patentability of the claimed invention (Ans. 11).

As stated *supra*, “[t]he mere age of the references is not persuasive of the unobviousness of the combination of their teachings, absent evidence that, notwithstanding knowledge of the references, the art tried and failed to solve the problem.” *In re Wright*, 569 F.2d at 1127. Thus, we are not persuaded by Appellant’s argument regarding the 20-year knowledge of the use of catalysts in lasers and lack of extension of their use in discharge lamps absent evidence that the art tried and failed to solve the problem.

Furthermore, as stated *supra*, where the claimed subject matter is a combination that only unites old elements (i.e., discharge lamps and catalysts known to recombine CO and O into CO₂) with no change in their respective established functions, and the combination yields predictable results (i.e., recombination of CO and O into CO₂ for the purpose of improving the lifetime of respective devices using CO₂), the claim is unpatentable as obvious under 35 U.S.C. § 103(a). *KSR*, 127 S. Ct. at 1740.

For the foregoing reasons we find that the Examiner did not err in rejecting claims 1-17 under 35 U.S.C. § 103(a).

CONCLUSIONS OF LAW

We conclude that the Appellant has not shown that the Examiner erred in rejecting claims 1-17 under 35 U.S.C. § 103(a).

Appeal 2007-3866
Application 10/009,845

DECISION

The decision of the Examiner to reject claims 1-17 is affirmed.

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

KIS

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